

Date: Wed, 7 Sep 94 04:30:15 PDT
From: Ham-Ant Mailing List and Newsgroup <ham-ant@ucsd.edu>
Errors-To: Ham-Ant-Errors@UCSD.Edu
Reply-To: Ham-Ant@UCSD.Edu
Precedence: Bulk
Subject: Ham-Ant Digest V94 #299
To: Ham-Ant

Ham-Ant Digest Wed, 7 Sep 94 Volume 94 : Issue 299

Today's Topics:

AC House wiring as antenna
AC House wiring used as antenna?
Antenna gain ratings? (2 msgs)
Calibrated Antenna Tuner=analyzer?
Does SWR change...
HERE's a tough one for you
How to build indoor CB antenna?
KT-34XA to KT-34A conversion info wanted
Q: slitted tube antennas
Replacement pad for magnetic mount antenna
Secret's of the Collinear Vertical?
Top view of radiation pattern?

Send Replies or notes for publication to: <Ham-Ant@UCSD.Edu>
Send subscription requests to: <Ham-Ant-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Ant Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-ant".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 6 Sep 94 16:18:00 GMT
From: news-mail-gateway@ucsd.edu
Subject: AC House wiring as antenna
To: ham-ant@ucsd.edu

In digest 293 Val Breault writes:

>In article <343161\$g8i@sundog.tiac.net> rblaine@max.tiac.net (Russ Blaine)
>writes:

>> I have seen adapters that plug into an AC outlet in a house which use

the

>> houses's AC wiring as an antenna. Would this work? I am interested in
>> this mainly for use on a CB, but I'm also interested in it for general
>> scanner use. Any advice or comments appreciated.

>>

>I don't recommend it.

>

>Some people spend a great deal of time and effort engineering antennas.
>The elements' length, spacing and their angular placement all contribute
>to the design goals. Those goals are usually to work well at the
>frequency(ies) of interest and to reject other (noise) frequencies.

>

>Household wiring is not installed with those goals in mind.

>

>Furthermore, household wiring is the best place to receive electrical
>noise from your own and your neighbors' electrical appliances. Things
>like aquarium heaters, vacuum cleaners, light dimmers and other typical
>appliances make the electrical wiring a very noisy signal source.

>

>I work part-time for Radio Shack.

>Radio Shack markets those adapters.

>I have refused to sell them.

>

>--

>Val Breault - N80EF - vbreault@gmr.com \ / |
>Instrumentation dept GM NAO R&D Center \ / |
>My opinions are not necessarily those of \ / __|
>GMR nor of the General Motors Corporation \ / |___

I second that non-recommendation! Those things (ac antenna adapters) have a capacitor in them that "isolates" the television (or whatever) from the AC house wiring. It is simply a very low value ceramic cap. All that has to happen is for that capacitor to short and WHAMMO you get 117volts AC into the antenna jack on your TV. They are designed for receive only. I can almost guarantee that cap will either short (see above) or open the first time you try to transmit through it.

Kevin

Legal stuff:

The above opinions are my own and not necessarily those of the staff, faculty, administration, or lab animals (woof!) of The University of Texas Health Science Center at San Antonio or anyone else who is not me.

Kevin R. Muenzler, WB5RUE
muenzlerk@uthscsa.edu

The University of Texas Health
Science Center at San Antonio,
Department of Computing Resources

** There is no such thing as a Monkey-Proof Program! **
** I can prove it! **

Date: Tue, 6 Sep 1994 16:29:58 GMT
From: netcomsv!netcom.com!slay@decwrl.dec.com
Subject: AC House wiring used as antenna?
To: ham-ant@ucsd.edu

Russ Blaine (rblaine@max.tiac.net) wrote:
: I have seen adapters that plug into an AC outlet in a house which use the
: houses's AC wiring as an antenna. Would this work? I am interested in
: this mainly for use on a CB, but I'm also interested in it for general
: scanner use. Any advice or comments appreciated.

At first glance the obvious answer about using a house's AC
system as an antenna will either have people gasping at the mere thought
of it .. or laughing out loud. However, I seem to recall hearing stories
that during World War 2, when Hams were ordered off the air for the
duration .. some would put RF into the AC mains and would actually
be able to QSO with other local hams... Can any old, old timers out there
comment on this as well?

Cheers de, Sandy WA6BXH/7J1ABV slay@netcom.com

Date: 6 Sep 1994 20:33:40 GMT
From: ihnp4.ucsd.edu!usc!sdd.hp.com!math.ohio-state.edu!news.acns.nwu.edu!
kgkmac.repoc.nwu.edu!user@network.ucsd.edu
Subject: Antenna gain ratings?
To: ham-ant@ucsd.edu

I'm going to be in the market for a 2m/70cm antenna soon and need help with the gain ratings. (I am currently considering the Cushcraft ARX 270, input/experiences about this or others would be appreciated.)

Some companies list the gain in dB, while others use dBd or dBi. From my limited research, it appears that an antenna rated at 8 dBi is around 6 dB.

Could someone post the differences in these measurement techniques? Is dB the more accurate and/or standard measurement? Is there a conversion for dBd and dBi to dB or vice versa? I would like to compare antenna's on an even playing field.

Thanks for your help.

Ken

N9YIR

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Kenneth Kalan      PP ASEL
Northwestern University
Prosthetics Research Laboratory
Rehabilitation Engineering Program
kgk@nwu.edu        N9YIR
=====
|  ___/[___] \___/___ |
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Date: 6 Sep 1994 22:26:46 GMT

From: ihnp4.ucsd.edu!usc!howland.reston.ans.net!news.cac.psu.edu!news.pop.psu.edu!
psuvax1!news.cc.swarthmore.edu!netnews.upenn.edu!blue.seas.upenn.edu!

depolo@network.ucsd.edu

Subject: Antenna gain ratings?

To: ham-ant@ucsd.edu

In article <kgk-0609941536070001@kgkmac.repoc.nwu.edu>,

Kenneth Kalan <kgk@nwu.edu> wrote:

>

>Some companies list the gain in dB, while others use dBd or dBi. From my limited research, it appears that an antenna rated at 8 dBi is around 6 dB.

dBi is decibels with an isotropic radiator as the 0dB reference

dbd is decibels with a half-wave dipole as the 0dB reference

0dBd = 2.14 dBi (the 2.14 varies slightly depending on who you believe)

That is, a halfwave dipole has 2.14 dB gain at the horizon as compared to an isotropic radiator when you are comparing VHF and UHF vertical antennas.

db alone can mean either dBi or dBd - it should be expressed somewhere which the writer is referring to. As a general rule of thumb, dBd is used when referring to a measured value, and dBi when referring to a calculated

value. For example, Cushcraft takes their new antenna out to the test range. They use a half-wave dipole as a reference. They find that their new super yagi has 6.9 dB of gain over their half-wave dipole reference antenna. So, the yagi has 6.9 dBd gain. However, for things such as effective radiated power, the calculations are done with respect to an isotropic radiator (EIRP), so 100 watts of transmitter power output (abbreviated TPO) into this yagi would give an EIRP of about 800 watts, assuming no feed line loss of course.

It has been my experience that Cushcraft, Diamond, Comet, and several of the other manufacturers inflate their gain figures. Assume that the numbers they give are dBi unless otherwise stated. Remember: marketing guys write the catalogs, not the engineers. To the marketing guys, 9.0 dB looks better than 6.9 dB, so they use the 9.0 value and leave off the "i" in dBi.

--- Jeff

--

Jeff DePolo WN3A Twisted Pair: H:(215) 337-7383 W:387-3059 x300
depolo@eniac.seas.upenn.edu RF: 443.800+ 442.400+ 442.200+ MHz PL 3B
Claim to Fame: I got the first speeding ticket on the information superhighway

Date: 6 Sep 1994 16:33:03 GMT
From: yale.edu!noc.near.net!hopscotch.ksr.com!jfw@yale.arpa
Subject: Calibrated Antenna Tuner=analyzer?
To: ham-ant@ucsd.edu

Cecil_A_Moore@ccm.ch.intel.com writes:

>My MFJ antenna tuner has too much electromagnetic field interaction
>between the capacitors and the inductor to be very useful as a calibrated
>analyzer but what if there were no interaction because of shielding?

You could work this the other way: apply a wide variety of calibrated loads to the output terminals, and record the settings. The interactions might make it difficult to come up with an analytical formula for the results, but unless you're planning on putting 10:1 reduction gears on the capacitors, a normal matchbox isn't enough of a precision instrument to worry much about trying to get high-precision answers.

If you plan to build a more precise instrument, you can probably substitute well-characterized toroids for the tapped coil to cut down on the field interaction (as long as you're willing to use low power while analyzing the antenna system). That way you should be able to keep the same box (unless, again, you actually do want to put reduction gears on the capacitors).

Date: Tue, 6 Sep 94 07:20:07 MST
From: galaxy.ucr.edu!library.ucla.edu!agate!darkstar.UCSC.EDU!news.hal.COM!olivea!
charnel.ecst.csuchico.edu!yeshua.marcam.com!zip.eecs.umich.edu!
newsxfer.itd.umich.edu!jobone!@ihnp4.ucsd.edu
Subject: Does SWR change...
To: ham-ant@ucsd.edu

On 3 Sep 1994 02:27:04 GMT,
Cecil_A_Moore@ccm.ch.intel.com <Cecil_A_Moore@ccm.ch.intel.com> wrote:

>In article <67945.wosborne@nmsu.edu>,
>William P. Osborne <wosborne@nmsu.edu> wrote:
>>
>> SLMR 2.1a On the 8th day God said: "SWR constant all along a
>(single characteristic impedance)
>>lossless line." Now can we stop this nonsense!!!!
>>William Osborne 505-646-3919
>
>Hi William, With the addition of the words in parentheses, of course
>you are right. This posting was an exercise after a new Novice friend
>of mine complained that newsgroup posters were not very nice people...
>not his exact words, but I can't repeat what he said.
>
>After being clued in on what was going on, Todd, N9MWB, had what I think
>is a good suggestion, which was a new group named rec.radio.amateur.newbie
>to which a newbie could post a "dumb" question without getting blasted by
>the usenet "gurus". I admit to being the worst offender of "barbed"
>responses but it sounds like a reasonable idea to me. Questions to rec.
>radio.amateur.newbie would be considered seriously... unlike the responses
>to my posting.

That sounds like a good idea. A place for electronic elmers!! I would read
such group and help where I could.

William Osborne 505-646-3919
Professor ECE Dept. PO BOX 30001, Dept. 3-0
New Mexico State University Las Cruces, NM 88003-0001

Date: Tue, 6 Sep 1994 16:31:25 GMT
From: ihnp4.ucsd.edu!dog.ee.lbl.gov!agate!howland.reston.ans.net!swiss.ans.net!
malgudi.oar.net!mercury.wright.edu!gsmith@network.ucsd.edu
Subject: HERE's a tough one for you
To: ham-ant@ucsd.edu

Hi all:

Just curious if anyone has plans for a high gain dual band(2m/70cm) BEAM. at least 13 elm on 2, and 8 elm on 440. I would be interested in building such.

greg, N8PPZ

Date: Tue, 6 Sep 1994 13:32:18 GMT

From: ihnp4.ucsd.edu!usc!howland.reston.ans.net!EU.net!Germany.EU.net!netmbx.de!
zrz.TU-Berlin.DE!zib-berlin.de!news.belwue.de!A208L.PH-Ludwigsburg.DE!
reischle@network.ucsd.edu

Subject: How to build indoor CB antenna?

To: ham-ant@ucsd.edu

In article <345rnp\$fkv@sundog.tiac.net> rblaine@max.tiac.net (Russ Blaine) writes:

>I am interested in building an indoor antenna for a CB radio. Is it
>possible to do this by simply wrapping a long strand of copper wire
>around a piece of coaxial cable? How thick should the copper wire be?
>Would a 10 ft. antenna be acceptable for CB use? Also, could anyone
>point me to a file or faq that references this? If not, any knowledge on
>this subject would be appreciated. Thanks..

Hello Russ,

forget about wire and whip antennas if you need a decent aerial for indoor use. Being a radio ham, I also had to look out for a compact antenna to use in the loft. So I built a "magnetic loop" antenna, just about 80cm in diameter which ranges from about 14 to 30 MHz.

For CB-use, you probably won't need more than 50cm in diameter. Although you might have to retune the loop when you QSY from CH 1 to 40, because small magnetic loops are incredibly narrow-banded. (That's why mine has a small 4.5 volts toy-type motor to tune it from my desk)

Magnetic loop aerals are very good indoor aerals. They don't pick up as much QRM as conventional ones, make far less TVI and reject off-band signals very strongly.

Antenna books for hams suggest lots of different ways to built these loop aerals, so get some of them for details. The one I made up mainly consists of copper-tube (for the loop) and an air-spaced capacitor (for tuning) that can stand some kilovolts. A gamma match feeds the RF to the loop.

I used a similar construction (2-Turn loop, 120cm diameter) down to 1.8 MHz. Without magnetic loop aerals, 160m would be absolutely impossible at my QTH.

Check your local library and ham-radio society for antenna books.

--> In some countries directional antennas are not allowed on CB
if mounted vertically, the magnetic loop has an 8-like radiation

pattern.

73 de Andy

```
      /-----Andreas "Andy" Reischle-----/
      /      e-mail: reischle@ph-ludwigsburg.de      /
      /  amateur packet: dl9set@db0sao.#bw.deu.eu  /
/-beam-me-up-scotty,-there-is-no-intelligent-life-down-here-/
```

Date: 6 Sep 94 20:14:29 GMT
From: news-mail-gateway@ucsd.edu
Subject: KT-34XA to KT-34A conversion info wanted
To: ham-ant@ucsd.edu

W0UA has a KT-34XA that has never worked right on 15M. It has been re-built with later dimensions, re-checked and played with for countless hours. He has asked me to find out two things.

- 1) The XA had a history of problems in the early years. Does anyone have a definitive understanding of what the issues were and what it takes to fix them so the antenna works right on 15? or
- 2) What is involved in converting the KT-34XA to a KT-34A? I know there was a kit to go the other way, but when going back to the KT-34A design (something being considered to reduce wind load as well as possibly sidestep the 15 M problems) are there dimensional changes on the elements and what are the element spacings?

Please respond directly and thanks for any input.

John W0UN broz@csn.org

(I have gotten a little behind on my email replies due to work issues. To anyone who has written me recently about technical issues my apologies and I will get caught up later this week. Sorry.--J)

Date: 6 Sep 1994 19:03:52 GMT
From: ihnp4.ucsd.edu!agate!darkstar.UCSC.EDU!news.hal.COM!olivea!korie!cs.utexas.edu!convex!convex!iphase.com!wes@network.ucsd.edu
Subject: Q: slitted tube antennas
To: ham-ant@ucsd.edu

Try the VHF-UHF Manual from the RSGB. They have information on the Alford Slot antenna. That is what I think you are refering to.

Wes

WA5TKU

Date: 6 Sep 1994 10:55:52 GMT
From: ihnp4.ucsd.edu!swrinde!howland.reston.ans.net!news.cac.psu.edu!
news.pop.psu.edu!ra!usenet@network.ucsd.edu
Subject: Replacement pad for magnetic mount antenna
To: ham-ant@ucsd.edu

I recently refurbished my 2 meter magnetic mount antenna by replacing the whip, cleaning the contacts, and replacing the pad. However, the replacement pad is a cheap, thin, stick-on pad I got free from a radio store. I went to three stores looking for something more durable, permanent, and protective of the car paint (I'm tired of chipping the finish), and found nothing.

So I ask everyone... Is there a commercially available, high-quality replacement pad for magnetic mount antennas?

I would think that thin rubber (old inner-tube?) would work well. If so, what adhesive should I use. What have some of you used for homebrew pads?

-Dave

--

David Drumheller, KA3QBQ phone: (202) 767-3524
Acoustics Division, Code 7140 fax: (202) 404-7732
Naval Research Laboratory
Washington, DC 20375-5350 e-mail: drumhell@claudette.nrl.navy.mil

Date: Tue, 06 Sep 1994 10:58:53 -0400
From: ftpbox!mothost!lmpsbbs!NewsWatcher!user@uunet.uu.net
Subject: Secret's of the Collinear Vertical?
To: ham-ant@ucsd.edu

In article <veltmanCvJC6o.8It@netcom.com>, veltman@netcom.com (paul Veltman) wrote:

>
> Gene,
>
> A 4 element collinear (4 1/2 wave elements stacked vertically) is a

> popular commercial antenna. They're good for about 6dbd,
> omnidirectional. I don't know what the Japanese super antenna claims,
> but if it's more than 6db, I would be suspicious. I don't know why the
> ARRL deleted it out of their book, but it's a good design. Build it and
> tell me what happens.
>
> 73,
>
> Paul WA6OKQ <veltman@netcom.com>

Just keep in mind that virtually every manufacturer who quotes a gain figure does so in dBi, that is dB gain relative to an isotropic radiator. The isotropic radiator is a great concept but cannot exist in the real world. The gain of a dipole is 2.15 dBi, so simply subtract that from the claimed number to get dB over a standard half-wave dipole (it's sort of rationalized lying). Now you begin to understand why the ARRL won't publish claimed antenna gain figures in QST!

--
Karl Beckman, P.E. < If our English language is so >
Motorola LMPS.RNSG.Analog Data < precise, why do you drive on the >
(Square waves & round corners) < parkway and park on the driveway? >
Opinions expressed here do not belong to or represent Motorola Inc.
Amateur radio WA8NVW NavyMARS NNNØVBH @ NOGBN.NOASI

Date: 7 Sep 1994 01:40:22 GMT
From: nntp.crl.com!jeffj@decwrl.dec.com
Subject: Top view of radiation pattern?
To: ham-ant@ucsd.edu

I am finishing a program to display radiation patterns displayed by Mininec. I am getting ready to have it display the top view looking down at the radiation pattern off the sides of the antenna. What got me wondering is how do they do it in the various examples I have seen? Do they take highest db of gain of all the various radiation angles at that particular point and plot that? Inquiring minds want to know! 8-)

Jeff

--
jeffj@crl.com |
AB6MB | PEOPLE BEFORE PROFITS!!!!!!
|

End of Ham-Ant Digest V94 #299
